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ABSTRACT

A large government agency had been experiencing a variety of changes. The new head of the agency approached communication researchers about doing analyses of the effectiveness of communication in the agency. The researchers conducted two studies: a qualitative one to identify organizational and organizational communication themes, and a quantitative one to describe the relationships among and between factors. There were two purposes of the studies described here. The first purpose of this paper was to describe the relationships between key communication factors and organizational outcomes in an organization experiencing significant changes. The second purpose was to describe the ways in which researchers employed qualitative and quantitative methods. The results identified some unique communication characteristics of the organization. The paper concludes with a description of the benefits of the mixed methods used in the studies. Contains 47 references and 7 tables of data. (Author/RS)

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ORGANIZATIONAL CHANGE AND ORGANIZATIONAL COMMUNICATION EFFECTIVENESS IN A GOVERNMENT AGENCY: QUALITATIVE AND QUANTITATIVE ANALYSES

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Western States Communication Asociation
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ABSTRACT

A large government agency had been experiencing a variety of changes. The new head of the agency approached communication researchers about doing analyses of the effectiveness of communication in the agency. The researchers conducted two studies: a qualitative one to identify organizational and organizational communication themes, and a quantitative one to describe the relationships among and between factors.

There were two purposes of the studies described here. The first purpose of this paper was to describe the relationships between key communication factors and organizational outcomes in an organization experiencing significant changes. The second purpose was to describe the ways in which researchers employed qualitative and quantitative methods. The results identified some unique communication characteristics of the organization. The paper concludes with a description of the benefits of the mixed methods used in the studies.

ABCD is an organization whose purpose is to regulate long term care facilities for Texas' residents. ABCD accomplishes its mission by conducting surveys, licensing inspections, investigating complaints, and annually reviewing the regulated facilities. Facilities include nursing homes, recovery centers, and assisted living areas.

The Austin portion of ABCD employs approximately 120 individuals whose jobs are classified as management, professional, or clerical. The ten units in the Austin office include Administrative Services Section, Information Services Unit, Complaints Intake and Investigations Section, Licensing Section, Certification Unit, Provider Enrollment Unit, Data/Records Management Unit, ICFMR/RC Department, Program Specialist Unit, and Quality Management and Educational Development. These units work to certify and license facilities, respond to complaints, and report on the various facilities within Texas.

Joe M. was appointed as the new Associate Commissioner at ABCD, and he faced several challenges. First, ABCD is a division of a department of human services (DHS), but until 1993 it was a part of a health department. Second, in November 1997, ABCD moved to a new facility, the Winters Building, with DHS. Finally, ABCD began a re-engineering effort in order to assist integration into DHS. Although the mission of ABCD remained nearly the same, the over 100 employees at the state offices had experienced a change of reporting lines within the government bureaucracy, a physical move to a new building, and a reexamination of the internal structure of the unit and the structure of the jobs within ABCD.

Joe M. recognized that communication was important for managing the changes and maintaining the quality of work during the changes. He consulted Tim B., a research and information management specialist at ABCD, about potential interventions. Joe M. approved two research efforts using students from Southwest Texas State University (SWTSU). First, Fay Barclay conducted a series of interviews in October and November of 1997 and employed other qualitative research methods to describe the culture and to suggest the most critical areas of concern. Second, Leah Bryant, Renee Koval, and Charles McInnis used a survey to specify the magnitude of the problems and to identify points of leverage for making recommendations. Philip Salem, Professor of Speech Communication, was the faculty advisor and helped direct both projects.

The first purpose of this paper was to describe the relationships between key communication factors and organizational outcomes in an organization experiencing significant changes. There are different orders of change (Salem, in press). First order change involves evaluating the outcomes of behaviors and adjusting behaviors to maximize goals (Argyris, 1993). Second order change, metanoia, occurs when there is a change of goals and in the ways of making sense of behavior and outcomes (Argyris, 1993; Senge, 1990). Also, change may be anticipatory or reactive (Nadler, 1998). Anticipatory changes are made early in a disequilibrium cycle before any industry upheaval and in the absence of any imminent environmental threat. Reactive changes come either in response to some

strategic initiatives by competitors or in more dire environmental circumstances. The changes in building and the re-engineering project were both anticipatory changes, but the change in reporting lines was a reactive one. Furthermore, the change in reporting lines and the re-engineering effort suggested second order change. Investigating ABCD provided a unique opportunity to describe an organization experiencing a variety of changes.

The second purpose of this research was to describe the ways in which researchers employed qualitative and quantitative methods. Mixed methods have been employed for five purposes (Cresswell, 1994; Greene, Caracelli, & Graham, 1989): (a) triangulation, seeking convergence of results, (b) developmentally, using one method to inform another, (c) complementarity, revealing different facets of phenomena, (d) initiation, revealing contradictions or perspectives unavailable to a single method, and (e) expansion, where mixed methods add scope and breadth to a study. The research reported here began as an effort at triangulation, and the methods were employed developmentally with the qualitative research preceding the quantitative one. However, as often happens, the two methods were complementary, revealing different aspects of phenomena, and the mixed methods added breadth. What is more, there were some contradictions.

The next section describes the qualitative study. This section includes a description of qualitative methods and the portions of the study which identified the key factors also used in the second study. The second section is about the quantitative investigation. It describes a survey and the statistical analyses. The paper concludes with a discussion about what has been learned about organizational change and mixed methods.

STUDY 1: IDENTIFYING ORGANIZATIONAL COMMUNICATION FACTORS

Theoretical Foundations

Barclay (1997) assumed the diversity of changes would affect how employees experience their organization and make sense of their work. This suggested three theoretical models that would frame her research. The first model was a cultural one. The culture of an organization reflects the collective learning of shared assumptions by its members and illustrates the right way to act and think (Schein, 1992). As such, the foundation for this learning rests in the communication of organizational members. The development of a common language is the springboard for the subsequent acquisition of shared concepts. Thus, the culture of an organization is ultimately communication.

Structuration theory suggests that structures constitute the rules and resources of communicative exchanges (Giddens, 1984). Furthermore, these structures are the mechanisms for meaningful interactions, as well as the outcomes of said interactions (Riley, 1983). In essence, structuration is the creation and recreation of culture by means of these rules and resources. As organizational members

communicate they create the culture which ultimately sustains and constrains them (Giddens, 1984). In other words, communication is culture.

Sensemaking at its most basic level refers to people's attempts to make sense of their experiences. Furthermore, sensemaking suggests a continual clarification of experience which works backwards (Weick, 1995). People tend to take actions and then make sense of those actions in retrospect. The focus, then, is on the process of interpretation, rather than the interpretation itself (Weick, 1995).

The focus of Barclay's study was organizational culture and sensemaking. Specifically, the goal was to gain an understanding of the organizational culture at ABCD through an examination of the communication patterns and processes of employees as they make sense of their experiences on the job, with each other, and in relation to the numerous changes ahead.

Qualitative Methods

Barclay used ethnographic methods in her study. Ethnography is research aimed at the exploration of the social norms in a group (Rubin, Rubin & Piele, 1996; Atkinson & Hammersley, 1994). Typically, it entails a thorough description of the group's beliefs, experiences, and social system (Lindlof, 1995). A major goal of ethnography is the comprehension of the shared behavior, artifacts and collective wisdom that members use as they make sense of their experiences (Spradley, 1980).

Using ethnography to study organizational culture suggests many avenues of discovery. One of these is the metaphor. A metaphor is a figure of speech which provides a means of comparison enabling people to understand something according to the properties of something else (Lakoff & Johnson, 1980). In this way, a similarity is implied between two often very different objects or concepts (Trice & Beyer, 1993). In addition, metaphors play a crucial role in the sensemaking activities of organization members. Among the noteworthy qualities of metaphors, they make complex notions more accessible, help people to perceive the subtle features of a situation, and generally have more appeal than the dry concepts they represent (Ortony, 1975).

A popular means of understanding organizational culture is through an examination of the organization's norms. Norms consist of the unwritten rules and values that members create as they work together (Schein, 1992). Very often these norms are established in such a way that organizational members are consciously unaware of their existence.

Two common forms of ethnographic research are participant observation and ethnographic interviews. The significance of participant observation is that it permits researchers to view the organization from the inside and interact with the scene they are observing (Rubin, et al.,1996). The researcher's role can best be described as observer-as-participant (Atkinson & Hammersley, 1994; Lindlof, 1995). In informant interviews, the roles of the particpants are distinct. That is, the intervewer conducts the interview as a non-member of the culture while the

interviewees recognize themselves as members of a culture and a source of information about that culture. Characteristics of the informant interview include an impromptu exchange and the establishment of a solid rapport with the interviewee (Lindlof, 1995).

The primary source of data consisted of twenty informant interviews, which lasted approximately two hours each. Employees were contacted and the interviews were scheduled at times which were most convenient for the employees. Barclay followed a loosely structured interview guide based on the format developed by Barnett and Goldhaber (Goldhaber,1993). This approach encouraged employees to discuss their experiences in ABCD and generally allowed for more conversational interviews. At the beginning of each interview employees were informed that their names would be included on a list of participants, but that their individual responses would not be directly attributed to them. The researcher informed the participants that the interviews were being tape-recorded. However, they were told that they had the option to not be recorded or stop the recording at any time during the process if they felt uncomfortable. Furthermore, Barclay explained that the purpose of recording was to help with the research process and that no one else would hear the interviews. In an effort to preserve the anonymity of participants, Barclay identified interviewees with a number, such as "P-52" in the body of her report (Barclay, 1997). Likewise, when participants' responses included the name of an actual employee, it was replaced with a fictitious name.

Representative sampling is one approach for qualitative research (Lindlof, 1995). Barclay used stratified sampling to generate the sample of employees to be interviewed. Barclay designated three subgroups within ABCD: Management (Associate Commissioner, Section Managers, Unit Managers, Unit Supervisors and Group Leaders), Professional Staff (Program Specialists, Nurses, Administrative Technicians III and IV, and engineers) and Clerical Staff (Administrative Support, Technicians I and II, Secretaries, and File Clerks). Once these subgroups were specified, she used probability proportionate to size sampling (PPS) in order to collect participants from each. Probability proportionate to size sampling (PPS) ensures that the size of samples selected from each subset reflects its size in the population (Smith, 1988).

The interview data was supplemented with several informal interviews, a focus group, observations of meetings and interactions, as well as textual analyses of documents. As a tool for qualitative research, the focus group has tremendous capability to generate a wealth of useful data. Normally, focus groups involve five to ten participants in a moderated group discussion covering relevant topics (Greenbaum, 1988; Morgan, 1988). A unique property of the focus group is its process view of the interactions among participants (Byers & Wilcox, 1991). A focus group was held with a representative sample of employees from the various sections and units of ABCD. The purpose of this encounter was to test the findings from the informant interviews and probe for more details which might emerge in a group setting.

The interview data generated in this ethnographic study form the basis for this report. In particular, the findings yielded six significant cultural norms. These include 1) stepchild of DHS, 2) compartmentalization, 3) politics, 4) information is power, 5) favoritism, and 6) humor. The full description of these results is detailed in Barclay's final report (Barclay, 1997). That report also identified various communication strengths and weaknesses at ABCD. What follows is a more detailed description of those factors.

Themes

There were two groups of organizational communication factors. Problem factors consisted of organizational or organizational communication outcomes most frequently noted by the participants in the qualitative study. In effect, the "problems" were the most common complaints. The communication influences themes were less frequently mentioned as complaints or were more often used to explain the problems.

The descriptions of the themes include formal defintions and elaboration from organizational communication literature as well as specific references to qualitative data. This presentation of results suggests a cyclical design in which the qualitative researcher alternately consults the data and the literature (Lindlof, 1995). However, Barclay used a more linear design involving gathering and interpreting data first followed by connecting the themes to the literature.

Problem Areas

Barclay (1997) identified two problem areas. Information adequacy is the extent to which organizational members receive needed information (1983). There are three types of information: task, human, and maintenance information (Goldhaber, 1993). Task or job related information refers to the information needed to meet day to day responsibilities. At ABCD task information includes information about job goals, how to actually perform a job, and the quality and quantity of work expected. Human or personal information refers to the information needed to meet individual needs. At ABCD this type of information includes information about the chances for bonuses or promotion, about personal benefits, and about evaluations of an individual's work. Maintenance or organizational information refers to the information needed to sustain the functioning of a unit or the entire organization. At ABCD maintenance information includes information about the success or failures of ABCD or a unit, the status of the re-engineering project, lines of responsibility, and information about how organizational decisions are made that might affect a person's job.

The variety of changes at ABCD has generated both organizational and personal uncertainty. A lack of information was the most freqently mentioned "communication weakness." Barclay's report notes confusion and suspicion about all three major changes. Individuals were especially worried about the new role of the agency, often using a "step-child" metaphor to identify ABCD. One employee commented, "I now understand why a lot of people here have negative feelings

about management at DHS, because we (ABCD) are treated like the red-headed stepchild." They were also worried about the status of their positions as part of the re-engineering efforts. One employee said that the selection of the reengineering team was political. "I know why some people were on it. They wanted to get rid of them, get them out of the mainstream, park them over there for nine months." All of this suggests a need for more human and maintenance information.

A second important factor is climate. Organizational climate refers to the set of perceptions individuals have about the social and psychological aspects of an organization (Falcione et al., 1987). It includes perceptions of autonomy, trust, warmth, fairness, formality, and relational satisfaction (Taguiri & Litwin, 1968). Supervisor climate refers to similar perceptions about the relationships between workers and their specific supervisors or managers, and coworker climate refers to the perceptions of the relationships between organizational members not in a reporting line (Falcione et al., 1987).

Of special interest to ABCD are the perceptions individuals have about the fairness and formality of the ways decisions are made about hirings and firings, work assignments, promotions, and bonuses. Influencing such decisions is part of an organization's politics (Frost, 1987), and we will refer to perceptions of these activities later as the political climate.

Climate is the product of how organizational members enact their culture (Schnieder, 1990). Barclay did identify humor as an element of the culture at ABCD and humor would suggest a supportive climate. But, she also identified compartmentalization as a norm. ABCD employees tended to identify more closely with their own sections than with other sections. On that note, two employees observed, "You just have your different sections and you have your different bosses in each section . . . you have your chiefs and all your indians in different sections and tribes don't cross paths." There was the feeling that information is power, and along with a sensitivity to internal politics, these norms suggest a defensive climate. Organizational members expressed resentment and dissatisfaction. In one case, a petition expressing some of these concerns was circulated.

Communication Influences

A potential influence on both information adequacy and the climate of ABCD is the effectiveness of the communication channels. Channels of communication are the various ways in which information can be communicated (Miller, 1995). There are many different channels of communication at ABCD. They include written communication such as memos, p-mail (the ABCD term for their e-mail), meetings, telephone, and informal face-to-face communication - the grapevine.

A particular channel can influence information adequacy and climate in two ways. First, each channel has particular fixed features that define the channel's ability to carry information and that influence perceptions of climate. Channels vary in the extent to which there are multiple cues or signals, the availability or speed of feedback, the use of natural language, and the personalness of the channel. These

features define a channel's capacity or richness, and when managers use inappropriate media, the results are overload, underload or distortion (Lengel & Daft, 1988). For example, using p-mail rather than face-to-face communication limits the amount of emotion you can express in the message. A manager that consistently used group meetings (a very rich channel) to simply report decisions or to make announcements (simple information) could risk boredom (underload), or worse, confusion because the majority of the time and communication in the meeting will be spent on other matters. Trying to make policy or strategic decisions through just written messages is a recipe for overload. Furthermore, employees will attribute meaning to the choice of channel. If a supervisor, for example, chooses to tell employees delicate information over p-mail, employees may perceive this as the "easy way out" and this may affect the climate between employees and the supervisor.

A second channel influence concerns how effectively individuals use the channels. The people using the channels can affect the cost of using a channel, the access to information through a channel, the amount and clarity of information in a channel, the timeliness of information, the responsiveness of a channel, etc. Although face-to-face communication is structurally richer than other channels, some people can make a tax return more interesting than talking to them face-to-face. The overall effectiveness of a channel is due to both the structural limitations of the channel and the individuals' skill at using the channel.

ABCD personnel identified p-mail and written documents as effective channels, but they also complained about meetings and teams (Barclay, 1997). The stength of written communiction as opposed to meetings was expressed by one employee in the following way. "Seeing it in writing helps because it makes thing clear. That way there's less room for mistakes like when you just hear things and it's oh I heard this, but Miles Davis down the hall heard something else."

There are certain aspects of meetings that make them more likely to provide adequate information and create a positive climate. Presenting an agenda or providing structure prior to the beginning of the meeting is more effective than telling the group the structure at each step (Brilhart, 1982; Hirokawa et al., 1988). In addition to agendas, providing documents prior to meetings and taking minutes (notes) at meetings improve the effectiveness of meetings (Volkema & Niederman, 1996). A group's size impacts whether a supportive climate is possible (Saine et al., 1974). In a smaller group, for example, there is more opportunity for supportive comments, constructive argument, and discussion of procedure. The group also needs to have a purpose, or clear and elevating goal, for meetings to be successful (Larson & LaFasto, 1989). When meetings have an agenda, purpose, an individual taking minutes, documents distributed prior to the meeting, and are small enough so that everyone can contribute, then they will more effectively allow employees to get the information they need and positively affect climate.

Skill at using some channels may be related to the individual's general interpersonal communication competence. Communication competence involves a demonstration of skills, and there are three types of skills most people would

identify with a competent communicator (Spitzberg & Cupbach, 1984). Openness involves speaking in a clear and understandable manner, freely expressing feelings, and being candid and frank. Responsiveness includes asking appropriate questions, encouraging others to speak, being open to the ideas of others, and being a good listener. Adaptability or flexibility involves dealing with unexpected situations well, coordinating communication with others, and managing disagreements or conflicts well. In an organization, communication competence includes working with others, realizing goals, adapting to situations, and being aware of the needs of others (Monge et al., 1982). When individuals are more open, responsive, or adaptive, information is communicated more effectively and task performance improves (Daniels & Spiker, 1983; Jablin, 1979; Richmond & McCrosky, 1992), and climate improves (Downs, 1992; Gibb, 1960; Kay & Christophel, 1995).

ABCD personnel identified several areas of concern related to communication competence (Barclay, 1997). There are indications of secrecy, a lack of openness. One person reported, "They (management) want to keep us in the dark so they don't let us know too much." Another noted, "It's kind of like things happen and they forget to tell us." Some employees also complained that their supervisors didn't "check into things," and were not responsive to questions. The most common communication skills complaints dealt with adaptability and conflict management. The compartmentalization norms in the agency seemed to make it difficult to coordinate communication and avoidance seemed to be the norm for managing conflict. One employee noted, "They (other employees and managers) snub each other and they get together in their offices, and as the Brits say, they natter, natter, natter, natter, natter about it."

STUDY 2: INVESTIGATING RELATIONSHIPS AMONG AND BETWEEN ORGANIZATIONAL COMMUNICATION FACTORS

Research Questions

Summarily, ABCD personnel reported dissatisfaction with the effectiveness of some channels of communication and most aspects of communication competence. However, a qualitative report cannot clearly identify the links between these potential communication influences and information adequacy and climate. It is possible, for example, that the p-mail system at ABCD is indeed connected to information adequacy, but it may not influence climate. Additionally, the communication factors may be unrelated to adequacy and climate; there may be other factors that are more important than communication. This report sought to answer three questions. (1) How pervasive and severe are the organizational communication problems at ABCD? (2) Which channels of communication have the greatest influence on information adequacy and climate? (3) Which aspects of interpersonal communication competence have the greatest influence on information adequacy and climate?

Quantitative Methods

In January 1998, Salem worked with Tim B. and other members of the ABCD staff to write an initial version of the survey. Salem based the original items on the Information Inventory, an instrument with proven reliability and validity (Salem, 1990). In February, Bryant, Koval, and McInnis worked with the staff to insure the proper wording. Once complete, Tim B. gave the survey to Joe M., Associate Commissioner of ABCD, who then approved it for distribution.

Researchers distributed the surveys on Friday, March 13. The participants were asked to complete the survey during the hour they were distributed. Approximately sixty surveys were returned to Bryant, Koval, and McInnis on Friday afternoon. Due to previous commitments and workload, some participants were unable to complete the survey on March 13. These individuals completed the survey at their leisure, and all surveys were returned to Tim B. by Wednesday, March 18. Koval collected the surveys from Tim B. on March 18. Ninety-two usable surveys were collected.

In addition to a p-mail describing the nature and intent of the upcoming survey, a cover letter was also attached to each survey. This letter introduced the researchers and asked the respondents not to include their name on the survey materials. Each survey also included instructions on how to complete the survey and how to record the responses on an SWTSU answer sheet. The letter also thanked participants for their cooperation.

The survey contained 97 items. The first 92 questions were content related, items 93 through 96 were demographic questions, and 97 was an open-ended question. The questions on the survey looked at information adequacy, communication competence, communication channels, climate, general communication problems, and demographics. The demographic items were not analyzed due to an error in numbering. The survey produced nineteen scales.

Results

Survey Analysis

The survey used five-point scaling for the first 92 items. There were both positively and negatively worded items on the survey. The researchers re-coded items 1 to 23, 25, 34, 37, 45, 61, 65, 69, 71, 72, 75, 81 so that a high response of "E" (calculated as "5") is always the best response for the scales. The scores for the items for each scale were then averaged. For items 83 to 92 a higher score means a more frequent problem.

Table 1 displays the norms, means, standard deviations, and reliabilities of all the scales. The norms are means for 26 organizations using comparable scales or items in the Information Inventory (Salem, 1988). The norms are all scale means, except for the channels section. In this section, norm refers to the means for comparable items on the Information Inventory.

Table 1
The Means, Standard Deviations and Reliabilities of the Survey Scales

Topic	Item No.	Norm	M	SD	a
Adequacy of Information					
Task Information	1, 2, 4, 7, 9, 12, 15	3.73	3.68	1.02	.89
Human Information	3, 13, 14, 17, 18, 20	3.46	3.31	.97	.81
Maintenance Information	5, 6, 8, 10, 11, 16, 19, 21, 22, 23	3.34	3.05	.94	.89
Overall Information Adequacy	mean of the above three scales	3.51	3.35	.88	.89
Communication Competence					
Openness (OP)	24, 29, 31	3.38	3.01	.83	.67
Responsiveness (RE)	26, 33, 35	3.28	3.05	.84	.74
Conflict Mgt. #1 (CM1)	25, 27, 30, 34		2.80	.56	.18
Conflict Mgt. (CM)	25, 27, 30	3.15	2.73	.81	.65
Adaptability (AD)	28, 32, CM	3.23	2.83	.87	.81
Overall Competence	OP, RE, AD	3.30	2.96	.75	.86
Channels of Communication					
P-mail Timeliness (PT)	42-44		3.54	.76	.71
Effectiveness of P-mail	41, 45-47, PT	3.12	3.56	.61	.62
Effectiveness of Telephone	53-57	3.43	3.56	.63	.70
Effectiveness of Written Comm.	36-40	3.53	3.24	.66	.67
Effectiveness of Group Meetings	48-52	3.24	3.13	.80	.76
Effectiveness of the Grapevine	58-61	3.45	3.05	.79	.75
Communication Climate					
Supervisor Climate (SP)	66, 70, 73, 78	3.90	3.82	.93	.86
Coworker Climate (CW)	63, 67, 74, 76	3.77	3.47	.69	.78
Organizational Climate	64, 69, 79, 80, 82, SP, CW	3.54	3.24	.66	.76
Political Climate	62, 65, 68, 71, 72, 75, 77, 81		2.54	.79	.84

The researchers tested for reliability by calculating Cronbach alpha scores for each scale. This test examines the consistency of responses to the items that comprise a scale. An alpha score of .70 or higher indicates an acceptable or good level of reliability. Eleven scales met this standard. Scores between .60 and .70 are nearly as acceptable approaching the higher standard. Seven of the original scales met this standard. The alpha for the original conflict management scale (CM1) was poor. Removing item 34 from the scale yielded an alpha of .65 for CM and improved the overall reliability of the adaptability and competence scales. In the end, all the resulting scales were reliable.

Descriptive and Comparative Data

There were three separate scales for information adequacy. Subjects' responses for items 1, 2, 4, 7, 9, 12, and 15 were averaged to give a task information mean of 3.68. Subjects' responses for items 3, 13, 14, 17, 18, and 20 were averaged to give a human information mean of 3.31. The responses for items 5, 6, 8, 10, 11, 16, 19, 21, 22, and 23 were averaged to get a maintenance information mean of 3.05. The overall information adequacy mean was determined by averaging the means for the task, human and maintenance information scales. The overall information adequacy mean was 3.35. Adequacy was greatest for task information and least for human and maintenance information, and this is a typical pattern. However, the means for the scales suggest that information adequacy is a greater problem at ABCD than in other organizations, especially information about organizational or maintenance topics.

Table 2
The Norms and ABCD Means for Maintenance Information

Item	Topic	Norm	ABCD
22	Status of org.-wide changes, such as the re-engineering project.		2.19
8	How organizational decisions are made that affect my job.	3.00	2.61
23	What other sections are doing.		2.61
21	How my pay and workload compares to others in ABCD	3.02	2.75
5	ABCD's/org. successes & failures.	3.27	2.92
10	ABCD's/org's goals and objectives.	3.36	3.25
6	My unit's successes and failures.		3.26
11	My unit's goals and objectives.		3.36
19	How my job relates to the total operation of the ABCD.	3.52	3.72
16	Organizational lines of responsibility (the chain of command).	3.86	3.85

Table 2 displays the means for the maintenance information items compared to the norms for those items. Items 6, 11, 22, and 23 have no norms since these items were unique to the ABCD survey. The items are ordered from areas of least adequacy to greater information adequacy. Individuals have the greatest need for information about organization wide changes such as the re-engineering project, for information about organizational decision-making, and for information about what other sections are doing.

There were five different scales for competence. Subjects' responses to items 24, 29, and 31 were averaged to give an openness (OP) mean score of 3.01. Subjects' responses to items 26, 33, and 35 were averaged to give a responsiveness (RE) mean score of 3.05. Subjects' responses to items 25, 27, 30, and 34 were averaged to give the first conflict management (CM1) score of 2.80. When item 34 was dropped to improve reliability, the mean conflict management (CM) score was 2.73. Subjects' responses to items 28, 32, and the CM mean were averaged to give an adaptability (AD) mean score of 2.83. Overall competence was computed by averaging OP, RE, and CM. The mean for overall communication competence was 2.96, and this score and the other competence scores are considerably below the norms. The communication competence of the ABCD personnel is lower than the communication competence of personnel in other organizations.

Table 3
The ABCD Means and Standard Deviations of the Items in the Original Conflict Management Scale

Item	Topic: People who work here . . .	Mean	SD
25	are not productive when we disagree.	2.87	1.00
27	handle conflicts and disagreements well.	2.72	1.09
30	resolve conflict quickly/easily.	2.60	1.08
34	confront/avoid conflict.	3.02	1.01

Table 3 displays the re-coded means for the items in the original conflict management scale. Higher numbers are better communication competence. The mean of 2.60 for item 30 suggests that ABCD personnel do not resolve conflict quickly or easily, 2.72 for item 27 suggests that personnel do not handle disagreements well, and the mean of 2.87 for item 25 confirms that personnel are not productive when they disagree. Items 25, 27, and 30 are about the general outcomes or process of conflict management, but item 34 is about a particular way of dealing with conflict.

The mean of item 34 was 3.02, suggesting an "average" amount of avoidance. Recall that this item was re-coded so that higher numbers are more positive, and so the item indicates the extent to which individuals do not avoid. That is, the item indicates the extent to which individuals confront. Item 34 is not about the same

things as the other items, and this may well have been the reason for the poor reliability on the first scale. A more comprehensive scale measuring a variety of conflict tactics would be an excellent follow-up to this survey if ABCD wanted a more thorough indication of specific conflict behaviors.

There were five channels of communication considered. Subjects' responses to items 42-44 were averaged to determine a p-mail timeliness mean of 3.54. The mean for p-mail timeliness was not considered as a separate variable, only as a part of the scale for p-mail effectiveness. P-mail effectiveness was represented by items 41, 45, 46, 47, and the previous mean for p-mail timeliness to yield a mean of 3.56. Subjects' responses for items 53-57 were averaged to give a telephone effectiveness mean of 3.56. Subjects' responses to items' 36-40 were averaged to give a written communication effectiveness mean of 3.24. Responses for items 48-52 were averaged to give a meeting effectiveness score of 3.13. The final communication channel considered, the grapevine, consisted of the average of items 58-61 and yielded a grapevine mean of 3.05.

The comparisons in Table 1 suggest that the p-mail system at ABCD is functioning better than the computer communication in other organizations. An interesting note is that the grapevine is least effective at ABCD, nearly half a point different than in other organizations. However, we are cautious comparing channel means since the ABCD data is from scales and, therefore more reliable than the item means used to compare. For the most part, the perceptions of channel effectiveness appear to be comparable to other organizations.

Communication climate consisted of four different scales including supervisor climate, coworker climate, organizational climate, and political climate. The subjects' responses for items 66, 70, 73, and 78 were averaged to give a supervisor climate mean of 3.82. The mean for coworker climate was determined by taking the average of items 63, 67, 74, and 76 to yield a mean of 3.47. The mean of items 64, 69, 79, 80, and 82 were averaged with the means of the coworker climate scale and the supervisor climate scale to yield a mean of 3.24. The final type of climate, political climate, took the average of items 62, 65, 68, 71, 72, 75, 77, 81 to yield a mean of 2.54. All these means are lower than the norms. The climate at ABCD is somewhat defensive, and the political climate is very defensive.

Finally, items 83-92 asked individuals to indicate the severity of a variety of information problems. Table 4 displays the means and norms for those items. Recall that higher numbers indicate a more severe problem.

The biggest concerns at ABCD are that management does not know what employees think or feel, that important information is not available, and that management is concealing information. The concern for management concealing information is considerably greater at ABCD than in other organizations. ABCD personnel are least concerned about overload.

Table 4
The Norms and ABCD Means for Information Problems

Item	Topic	Norm	ABCD
90	management's information about employee needs	3.09	3.33
83	availability of information	2.64	3.03
89	management concealing information	2.46	3.02
88	general adequacy of information	2.63	2.73
84	timelines of information	2.84	2.71
92	response time or turnaround time	2.91	2.60
91	availability of information sources	2.56	2.53
85	reliability and accuracy of information	2.28	2.34
86	usefulness of received information	2.36	2.22
87	overload	2.13	1.99

Inferential Results

Channels

Table 5
Correlations of Channel Effectiveness with the Adequacy of Information and Communication Climate

	Channels of Communication				
	Written	P-mail	Meeting	Telephone	Grapevine
Information Adequacy					
Task	.31**	.37**	.53**	.26**	.37**
Human	.27**	.31**	.30**	.23*	.28**
Maintenance	.37**	.38**	.40**	.28**	.43**
Overall	.35**	.39**	.46**	.29**	.40**
Climate					
Coworker	.18*	.18*	.42**	.40**	.40*
Supervisor	.13	.27**	.25**	.38**	.22*
Organizational	.22*	.24*	.34**	.40**	.37**
Healthy Political	.53**	.37**	.42**	.39**	.37**

*= p<.05, one tailed**=p<.01, one tailed

Table 5 reports the correlations between the different communication channels (written, p-mail, meetings, telephone, and grapevine) with the adequacy of information and the communication climate. Written communication was not significantly correlated with supervisor climate (r=.18, df=90, p<.11, one tailed). All the remaining correlations were significant. When ABCD personnel use communication channels more effectively, they will get more needed information, and the climate will be more supportive.

Table 6
Adjusted Amount of Variance in the Criterion Variables Accounted for by the Predictors

	Predictors: Channels of Communication				
Criterion Variables	Written	P-mail	Meeting	Telephone	Grapevine
Information Adequacy					
Task		.05	.29		
Human		.08	.05		
Maintenance		.05	.07		.17
Overall Climate					
Coworker			.17	.06	
Supervisor				.14	
Organizational				.15	.06
Healthy Political	.27	.07	.04		

In order to understand these results better, the researchers conducted several stepwise multiple regression tests. There was a significant regression equation predicting task information adequacy (F=22.92, df=2, 89, p<.01) that accounted for 34% of the variance. Meetings effectiveness alone accounts for over 29% of the variance. There was a significant regression equation predicting human information adequacy (F=7.91, df=2, 89, p<.01) that accounted for 15% of the variance. The effectiveness of p-mail and meetings are the best predictors. There was a significant regression equation predicting maintenance information adequacy (F=13.28, df=3, 88, p<.01) that accounted for 29% of the variance. The effectiveness of the grapevine alone accounts for over 17% of the variance. There was a significant regression equation predicting coworker climate (F=14.59, df=2, 89, p<.01) that accounted for 23% of the variance. Meetings effectiveness alone accounts for over 17% of the variance. There was a significant regression equation predicting supervisor climate (F=15.53, df=1, 90, p<.01) with telephone effectiveness as the only variable in the equation accounting for 14% of the variance. There was a significant regression equation predicting organizational climate (F=13.11, df=2, 89, p<.01) that accounted for 21% of the variance. The effectiveness of the telephone alone accounts

for 15% of the variance. Finally, there was a significant regression equation predicting a healthy political climate ($F=19.59$, $df=3, 88$, $p<.01$) that accounted for 38% of the variance. The effectiveness of written communication alone accounts for 17% of the variance.

Table 6 displays the adjusted amount of variance in the criterion variables accounted for by the predictors in the various equations. Meetings, p-mail, and the telephone are the most influential. However, written communication is very important for the political climate, and the grapevine, informal face-to-face communication, has the greatest influence on maintenance information adequacy.

Competence

Table 7 reports the correlations between communication competence with the adequacy of information and the communication climate. All of the major competence scales are significantly correlated to the other variables. Notice that the correlations are somewhat higher for the climate variables. When ABCD personnel are more open, responsive, and adaptive in their interpersonal communication, they will get more needed information, and the climate will be more supportive.

Table 7
Correlations of Communication Competence with the Adequacy of Information and Communication Climate

	Communication Competence			Special Concern	
	Openness	Respons.	Adapt.	Conflict Mgt.	Confr/Avoid
Information Adequacy					
Task	.31**	.26**	.40**	.27**	-.30**
Human	.33**	.28**	.39**	.28**	-.25**
Maintenance	.29**	.29**	.38**	.26**	-.29**
Overall	.34**	.30**	.43**	.30**	-.31**
Climate					
Coworker	.34**	.42**	.49**	.51**	-.43**
Supervisor	.25**	.35**	.29**	.26**	.00
Organizational	.39**	.50**	.48**	.48**	-.22*
Healthy Political	.40**	.47**	.51**	.48**	-.22*

*= p<.05, one tailed**=p<.01, one tailed

The table also reports the correlations involving item 34 about confrontation/avoidance and the conflict management sub-scale. Recall that item 34 was re-coded so that higher numbers are more positive, and so the item indicates

the extent to which individuals do not avoid. That is the item indicates the extent to which individuals confront. Also note that this item was discarded from the conflict management sub-scale, and that the revised conflict management sub-scale is part of the adaptability scale. We took special note of this item and the sub-scale because Barclay highlighted these aspects of competence in her report. Again, nearly everything is significantly correlated. Only the correlation between supervisor climate and confrontation/avoidance was not significant. But, all the significant correlations involving confrontation are negative.

These correlations suggest two very interesting findings. First, when individuals at ABCD manage conflict effectively, they will get more needed information, and the climate will be more supportive. This is consistent with the earlier adaptability correlations and the literature. However, the correlations for confrontation/avoidance suggest that when individuals at ABCD **avoid more and confront less**, they are more likely to get needed information and more supportive climates. How is this possible? The descriptive data on these factors indicated that ABCD personnel were less skilled than the members of other organizations, especially at managing conflict and being adaptive. In other words, since the conflict management skills of ABCD personnel are so low, avoidance may be the best alternative in most situations.

In order to understand these results better, the researchers conducted two sets of stepwise multiple regression tests. The first set used the communication competence scales as predictors for the major outcome variables. There was a significant regression equation predicting task information adequacy ($F=17.25$, $df=1, 90$, $p<.01$) that accounted for 15% of the variance, a significant regression equation predicting human information adequacy ($F=16.55$, $df=1, 90$, $p<.01$) that accounted for 15% of the variance, and a significant regression equation predicting maintenance information adequacy ($F=15.42$, $df=1, 90$, $p<.01$) that accounted for 14% of the variance. In all cases, adaptability was the only significant variable in the equations. Adaptability was also the only significant variable in the equation predicting co-worker climate ($F=28.42$, $df=1, 90$, $p<.01$) which accounted for 23% of the variance and the equation predicting a healthy political climate ($F=32.16$, $df=1, 90$, $p<.01$) which accounted for 26% of the variance. However, responsiveness was the only significant variable in the equation predicting supervisor climate ($F=12.74$, $df=1, 90$, $p<.01$) which accounted for 11% of the variance and the equation predicting organizational climate ($F=30.73$, $df=1, 90$, $p<.01$) which accounted for 25% of the variance. This suggests that although all aspects of competence are correlated to the outcome variables, adaptability is the more important skill.

This led to the second set of regressions. In this case we used the separate items or sub-scales of the adaptability scale as predictors for the separate outcome variables. Item 28 is about dealing with unexpected events well, and item 32 is about coordinating communication with others. The scores from these two items were added to the mean for the conflict management sub-scale to obtain each subject's adaptability score.

This second set of regressions produced two patterns. First, coordinating communication with others was the only significant item in the equations that predicated task information adequacy (F=22.71, df=1, 90, P,.01) accounting for 19% of the variance, human information adequacy (F=13.70, df=1, 90, P,.01) accounting for 12% of the variance, and maintenance information adequacy (F=17.39, df=1, 90, P,.01) accounting for 15% of the variance. Coordination combined with conflict management in the equation that predicted a healthy political climate (F=17.11, df=2, 89 p<.01), but coordination alone accounted for 22% of the variance while conflict management added only 4% to the variance explained by the equation. Conflict management was the only significant characteristic in the equation that predicated organizational climate (F=24.47 df=1, 90, p<.01) accounting for 23% of the variance, and dealing with unexpected information and situations was the only significant item in the equation that predicted supervisor climate (F=7.84, df=1, 90, P,.01) accounting for 7% of the variance. Managing conflict well and dealing with the unexpected combined in a significant equation (F=18.43, df=2, 89, p<.01) to explain 28% of the variance in coworker climate, but conflict management alone accounted for 25% of the variance.

The second set of regressions suggest that an ability to coordinate communication with others is the most influential aspect of adaptability. Coordinating communication was either the only characteristic or the dominant characteristic in four of the seven regressions in the second set of tests. The second most influential aspect of adaptability is managing conflict well since it was only characteristic or the dominant characteristic in two of these equations. Dealing with the unexpected was the only item in one equation.

DISCUSSION

One purpose of these two studies was to describe communication in an organization experiencing a variety of changes. The overall pattern of organizational communication at ABCD is typical of most organizations, but the problems at ABCD are generally more severe than in other organizations. Information adequacy and climate are common organizational problems. However, individuals have a greater need for information at ABCD than at other organizations, especially information about organizational or maintenance topics. Similar to other organizations, the most supportive climates are those between supervisors and subordinates and among coworkers, but even these relationships are somewhat less supportive than in other organizations. The overall organizational climate is also supportive, but less than in other organizations. The political climate at ABCD is very defensive. Many believe that management does not know what employees think or feel, that important information is not available, and that management is concealing information.

The pattern of channel usage at ABCD is typical of most organizations, and nearly all aspects of channel use influence the adequacy of information received by ABCD personnel and the climate at ABCD. Meetings, p-mail, and the telephone are the most influential. However, written communication is very important for the

political climate, and the grapevine, informal face-to-face communication, has the greatest influence on maintenance information adequacy.

The communication competence of the ABCD personnel is lower than the communication competence of personnel in other organizations. The biggest deficiencies appear to be in an ability to adapt communication to the communication of others. This includes an ability to coordinate communication with others, to manage conflict well, and to deal with unexpected situations. Similar to most organizations, all the major aspects of communication competence influenced the adequacy of information received by ABCD personnel and the climate at ABCD. The most influential aspect of competence was the ability to adapt communication to others. More specifically, the ability to coordinate communication with others is the most influential aspect of adaptability and the second most influential aspect of adaptability is managing conflict well. In fact, the current inability to manage conflict well at ABCD suggests that avoidance may be the more productive conflict strategy.

All of this suggests that organizations experiencing changes similar to ABCD might expect greater amounts of maintenance information inadequacy and a more defensive climate. Adaptability appears to be the most important skill when an organization is experiencing such changes. Furthermore, if employees are not skilled communicators, conflict avoidance may be more beneficial than confrontation. Although our research employed mixed methods, these assumptions are from the data of only one organization. There is a need for further research of organizations experiencing a variety of changes.

Our second purpose was to describe our experiences with mixed methods. We designed this research so that the two methods would be used developmentally. The qualitative methods identified themes that later became variables in the quantitative study. Also, the quantitative results actually expanded the qualitative ones. This was because the qualitative researcher was able to link her themes to constructs with elaborate subsets of constructs and variables. For example, the subjects in the qualitative study may have commented on the lack of information, but they would have been unlikely to compare the adequacy of different types of information. The mixed methods also provided some triangulation. For example, the various climate problems reported in the qualitative data were confirmed in the quantitative data. Furthermore, the quantitative data confirmed the magnitude of the problems. The mixed methods did have one contradiction. The subjects in the qualitative study complained about conflict avoidance, but the quantitative results suggest that avoidance may be an effective means of managing conflict. Because the qualitative study came before the quantitative one, there was little complementarity. That is, if the qualitative study came after the quantitative one, the qualitative study would have searched for more and different facets of phenomena. Our experiences with mixed methods were good ones, and we believe more of these efforts should be attempted.

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